

**Computer System Reliability.** This system will be built on a highly reliable computer hardware platform. A fault tolerant redundant system mode will be used. The standby system will be ready to take over operations should the primary system fail. The system will have extensive audit checking and status monitoring built into the logic to trigger automatic failovers when necessary. Full site redundancy will be available should the entire site fail. The alternate site will be able to take over the entire traffic automatically or on demand. Power backups and the computer room environment will be designed with high reliability criteria.

There will not be a single point of failure for the computer hardware that would cause system wide outage. The software will be designed for high reliability with failover capability. There will be high reliability designed in all front-end processors and interfaces.

**Network Reliability.** The entire network will be designed to avoid a single point of failure anywhere in the network that would cause a system wide outage. On the user interface side through PSTN and PSN there will be redundancy with multiple providers, multiple ports, multiple routes and multiple sites. Should a failure occur in any one of the paths, traffic will be routed through the other path, the other port, and/or the other site as needed.

On the computer system to the computer system interface within the NWN system, alternate paths will be designed and traffic will be constantly monitored so that proactive rerouting could be implemented through the network management center.

There will be separate paths for the satellite uplinks and downlinks from the NOC and sub-controllers. Multiple satellites will provide coverage so that should one satellite fail, even for a short duration, by shifting the traffic over to another satellite there will not be a loss of service.

A complete disaster recovery plan will be developed and monitored at all times to keep operations personnel and others ready for any potential disaster.

**Portable Terminal Reliability.** These portable terminals will be designed to be carried by people in their vehicles, in the office and outside. They will be weather resistant and will have high quality components and be designed to offer excellent performance and reliability.

## **A6    Availability**

The NWN system will be designed with a goal of 100% availability of service. Mtel has experience in running a nationwide paging system with availability in excess of 99.9%. The NWN will achieve a similar high level of availability by careful planning of the system hardware and software. Starting with the NWN system architecture, hardware and software

design, and leading to the final implementation of the entire system, availability will be considered in each design and engineering decision made.

Computer rooms, remote sub-controller sites, traffic distribution networks, network access points, RF systems and portable terminals will be designed for very high availability. As stated earlier, there will not be a single point of failure that would bring the system down.

With proper planning, design, implementation and ongoing maintenance and active monitoring, higher availability will be ensured.

**TAB F**

## GLOSSARY OF TERMS

ACK	Affirmative acknowledgement
ADFM	Advanced Dynamic Frequency Management
AGC	Automatic gain control
AM	Amplitude modulation
AM/AM	Undesired amplitude output change for a given amplitude input change
AM/PM	Undesired phase output change for a given amplitude input change
AMS	Advanced Messaging Service
AMSC	American Mobile Satellite Corporation
AP	Access point
ARQ	Automatic repeat request
ASCII	American Standard Code for Information Interchange
ASIC	Application specific integrated circuit
AT&T	American Telephone & Telegraph
AWGN	Additive gaussian white noise
Baud	Symbols per second
BCH	Bose-Chandhuri code
BC Tel	British Columbia Telephone Company
BER	Bit error rate
Bit	Binary digit
bps	Bits per second
BPSK	Binary phase shift keying
BW	Bandwidth
C	Centigrade
CAD	Computer aided design
CCITT	International Telegraph and Telephone Consultative Committee
CDMA	Code division multiple access
C/N	Carrier to noise ratio
C/I	Carrier to interferer ratio
CPODA	Contention priority ordered demand assignment
CPU	Central processing unit
CRC	Cyclic redundancy code
CT-2+	Cordless telephone 2+ standard
dB	Decibel
dBc	Decibels referenced to carrier power
dBm	Decibels referenced to a milliwatt
DCD	Data carrier detect
DFFT	Discrete fast fourier transform
DM	Device material (parts cost)
DSP	Digital signal processor
DTMF	Dual tone multi-frequency

DTR	Data terminal ready
Eb/No	Signal bit energy to noise power density
e-mail	Electronic mail
ERMES	European Radio Messaging System
FAMC	Fully absorbed manufacturing cost
FCC	Federal Communications Commission
FDM	Frequency division multiplexing
FEC	Forward error correction
FM	Frequency modulation
$f_s$	Data rate in baud or subcarrier spacing in Hertz for orthogonally spaced multiple subcarrier systems
FSK	Frequency shift keying
GASK	Gaussian amplitude shift keying
GSM	Groupe Speciale Mobile
GMSK	Gaussian minimum shift keying (used in European GSM system)
GSC	Golay sequential code
HF	High frequency
Hz	Hertz
IBO	Input back-off
IM	Intermodulation
IP	Intelligent peripheral
ISO	International Standards Organization
IXO	IXO Corporation
kb/s	One thousand bits per second
kbps	Kilobits per second
kHz	Kilohertz
LCD	Liquid crystal display
$\mu$	Micro ( $1 \times 10^{-6}$ )
mA	Milli-ampere(s)
MCM	Multicarrier modulation
MCU	Manufacturing cost per unit
MHz	Megahertz
MIS	Management information system
MOOK	Multitone on-off keying
MPR	MPR Teletch, Ltd.
M-PSK	Multi-phase shift keying

ms	Millisecond(s)
Mtel	Mobile Telecommunication Technologies Corporation
NAK	Negative acknowledgement
NIU	Network interface unit
NOC	Network operation center
NRE	Nonrecurring engineering
NSP	Wholesale price
NRZ	Non return to zero
NWN	Nationwide Wireless Network
OA&M	Operations, administration and maintenance
OBO	Output back-off
OFDM	Orthogonal frequency division multiplexing
OQPSK	Offset quadrature phase shift keying
OS	Operating system
OSI	Open systems interconnection
PA	Power amplifier
PC	Personal computer
pcb	Printed circuit board
PDM	Portable data modem
PDT	Portable data terminal
PFSK	Permutation frequency shift keying
PIN	Personal identification number
PM	Phase modulation
POCSAG	Post Office Code Standardization Advisory Group
ppm	Parts per million
PSN	Packet switched telephone network
PSTN	Public switched telephone network
QAM	Quadrature amplitude modulation
QASK	Quadrature amplitude shift keying
QPSK	Quadrature phase shift keying, 4-level PSK
RAM	Random access memory
RC	Raised cosine
RF	Radio frequency
RMS	Root mean square
ROM	Read-only memory
RPCN	Return path communications network
RPSC	Return path sub-controller
RS	Reed Solomon (block code)
RS-232	TIA standard physical level interface protocol

RTS	Regional transmitting system
Rx	Receiver
SCP	Service control point
SINAD	Signal, noise, and distortion divided by distortion
SMS	Service management system
SN	Service node
SP	Sell price
SQAM	Staggered quadrature amplitude modulation
SS7	Signalling System 7
SSPA	Solid state power amplifier
SYNC	Synchronization
TAPP	Telocator alphanumeric paging protocol
TDM	Time domain multiplex
TDMA	Time division multiple access
T/R	Transmit/receive
TNPP	Telocator national paging protocol
Tx	Transmitter
UHF	Ultra high frequency
UI	User interface
Vdc	Volts (direct current)
VPN	Virtual packet network (closed user group)
VSAT	Very small aperture terminal
WSP	Wholesale price
X.25	CCITT specification for a packet switched data interface
X.400	CCITT specification for interfaces between e-mail systems
X.500	CCITT directory services specification
Xtal	Crystal